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ABSTRACT

The development and testing of the effectiveness of a model for the identification of information needs in program evaluation are discussed. More than 200 subcategories of information needs were divided into three major categories: history, conception, planning and development of the program; operation--the ongoing processes of the program; and impact--program results. Five major variables were investigated: (1) number of information needs identified; (2) type of information needs identified; (3) adaptability to varied evaluation situations; (4) subject ratings on importance and priority; and (5) comprehensiveness of the framework. Results verified the framework's potential as an effective tool to aid evaluators in exploring evaluation situations, in broadening the scope of evaluation studies, and in increasing the impact of these studies. (Author/MH)

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Assessing the Effectiveness of a Framework for the Identification of Information Needs in Program Evaluation

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ABSTRACT

The objectives of this study were to develop and test the effectiveness of a framework for the identification of information needs in program evaluation. An empirical study was conducted to determine the framework's potential utility. Five major variables were investigated: (1) number of information needs identified, (2) type of information needs identified, (3) adaptability to varied evaluation situations, (4) subject ratings on importance and priority, and (5) comprehensiveness of the framework. Results verified the framework's potential as an effective tool to aid evaluators in exploring evaluation situations, in broadening the scope of evaluation studies, and in increasing the impact of those studies.

Assessing the Effectiveness of a Framework for the Identification of Information Needs in Program Evaluation*

MARILYN MARTIN CRAIG

Educational evaluation studies are conducted to provide information about the context, the operation, and the outcomes of educational programs. An almost unlimited amount of data is potentially available, yet most evaluators secure only a small fraction of it. The resulting evaluation studies often are narrow in scope and of limited utility. The objectives of this study were to develop and test the effectiveness of a tool designed to aid evaluators in broadening the scope and thereby increasing the utility of their evaluation studies. A description of this tool will be presented, then the design and findings of the experimental study will be discussed.

The Framework for the Identification of Information Needs in Program Evaluation

The framework developed in this study is designed to detail the information needs of an evaluation situation, that is, information of any kind that might aid in determining the merit or worth of the program under consideration. More than 200 subcategories of information needs, tailored to instructional programs at the local level, are included in the framework. The information needs in each subcategory are accompanied

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*This study was conducted at Cornell University, Ithaca, N.Y., as a part of the author's graduate degree program.

by corresponding questions to aid the evaluator in relating the information needs to the specifics of the program.

The framework is divided into three major categories: History, Operation and Impact. The History category contains those information needs which define how the program was initially conceived, planned and developed. Four subcategories detail information needs related to events which occurred prior to the program's implementation. These four categories are program background, program development, program structure, and program actors.

The second major framework category, Operation, reviews the ongoing processes of the functioning program. The information needs in this category help the evaluator determine how well the program is functioning in the subcategories of curriculum and instruction, evaluation, and decision-making.

The final framework category, Impact, concentrates on program results. Each information need in the Impact category represents a possible end-of-program outcome. The first Impact subcategory, effects, includes achievement, values, attitudes, expert judgments and subjective observations. Each of these effects is considered relative to a specified group. Program costs are also addressed. Sample pages from each of the three categories are included in the appendix of this paper.

Empirical Study: Design

To determine the utility and effectiveness of the framework, an empirical study was conducted. One hundred-four master's level graduate students with little or no training in evaluation participated in the study. These subjects assumed the role of evaluators and were given responsibility for planning a simulated evaluation study. They were first asked to identify all relevant information needs for the evaluation study and later were asked to rate each on importance. Two experimental groups were designated. Seventy-six treatment subjects were asked to perform two tasks: (1) identify all information needs relevant for the evaluation before consulting the framework, and (2) use the framework to supplement the list of information needs in Task 1. Twenty-eight control subjects were asked to perform Task 1 only.

This design actually provided two control groups--the designated control group and the pre-framework treatment group. That is, Task 1 was identical for the treatment and control groups. The treatment group's use of the framework in Task 2 constituted the experimental treatment. Thus, comparisons of the information needs generated by the treatment group in Task 1 (pre-framework) versus those generated by the same group in Task 2 (post-framework) were of most interest and will be the primary focus of this paper. However, comparisons between the control and treatment groups' pre-framework information needs will verify the comparability of the two groups on this initial task and establish the validity of the information needs generated by the pre-framework treatment group.

To regulate the amount and type of data available to the subjects, three simulated evaluation situations were constructed. One situation required a summative evaluation, the second called for a context evaluation, and the third required a process evaluation. Each subject received one of these three evaluation situations. Directions for both the treatment and control groups contained a limited amount of background evaluation material, specified how information needs were to be stated, and described how importance and feasibility ratings were to be assigned. The directions for the treatment group also included a short explanation of the use of the framework.

Empirical Study: Findings

The empirical study addressed four major questions. First, was the framework successful in broadening an evaluator's frame of reference? Did a person who had access to the framework identify more information needs of the evaluation situation than a person who did not have access to the framework? Second, if the framework was successful in bringing more information needs of the evaluation situation to the user's attention, how important were these new information needs? Were they meaningful or trivial? Third, did the type of evaluation situation change the effectiveness of the framework? Was the framework more suited to one type of evaluation situation than another? Fourth, how comprehensive was the framework? Which information needs were not included in the framework? The findings on each of these questions are examined in the following section.

Contribution of the Framework

Can the framework help to broaden an evaluator's frame of reference? Did subjects identify more information needs when they had access to the framework? The first data relevant to these questions are the total number of information needs identified over all evaluation situations. Without the aid of the framework, pre-framework treatment subjects identified a median of approximately 15 information needs. (Control subjects identified a median of 15.5 information needs.) When the treatment subjects used the framework to re-explore the evaluation situation, they added a median of 20.5 new information needs, an increase of 126 percent. These results clearly indicate that the framework aided subjects in identifying more information needs.

To determine if the scope of the evaluations was broadened, data on the number of information needs identified per framework category were examined (Table 1). In the pre-framework task, treatment subjects identified approximately equal numbers of information needs in each of the History, Operation and Impact categories. This pattern did not hold true for the information needs identified in the post-framework task. The number of post-framework information needs identified in the History and Operation categories was about double the number of pre-framework information needs identified in these categories. In the Impact category, the number of pre-framework information needs was approximately equal to the number of post-framework Impact information needs. Statistical tests using a one factor repeated measures design showed significant differences

in the number of treatment group post-framework information needs generated per category ($F_{2,75} = 48.85$, $p < .005$). There were no significant differences in the number of pre-framework information needs generated per category by the treatment group or the control group.

Table 1

Number of Information Needs,
By Framework Category and Treatment Task

Treatment Task	Framework Category		
	History N = 76	Operation N = 76	Impact N = 76
Pre-framework	Md. = 3.83 $\bar{X}$ = 4.24 SD = 3.06	Md. = 2.67 $\bar{X}$ = 3.34 SD = 3.07	Md. = 2.68 $\bar{X}$ = 3.88 SD = 3.40
Post-framework	Md. = 7.13 $\bar{X}$ = 8.28 SD = 5.21	Md. = 7.07 $\bar{X}$ = 7.96 SD = 6.16	Md. = 2.67 $\bar{X}$ = 3.59 SD = 4.17

These data suggest that the framework was especially successful in helping treatment subjects identify new History and Operation information needs--those information needs often neglected in evaluation studies. The framework also aided subjects in identifying some new Impact information needs. These results provide an initial indication that the framework can produce more comprehensive evaluation studies.

Relevance of Information Needs

Given the framework's success in increasing the number of information needs identified, the next question to be addressed was the

importance assigned to the information needs. After subjects had identified information needs, they were asked to rate each need on importance--ranging from A, Very High Importance to D, Low Importance. The results are shown in Table 2.

Table 2

Number of Information Needs Identified Per Importance Group, and Mean Importance Rating (MIR), by Treatment Task

Treatment Task	Importance Groups				MIR
	A Very High	B High	C Medium	D Low	
Pre-framework	Md. = 3.75 $\bar{X}$ = 4.25 SD = 2.66	Md. = 5.17 $\bar{X}$ = 5.20 SD = 2.86	Md. = 3.17 $\bar{X}$ = 3.73 SD = 2.47	Md. = 1.56 $\bar{X}$ = 1.96 SD = 1.98	Md. = 2.77 $\bar{X}$ = 2.82 SD = .40
Post-framework	Md. = 3.33 $\bar{X}$ = 4.52 SD = 3.36	Md. = 5.50 $\bar{X}$ = 6.16 SD = 4.93	Md. = 5.50 $\bar{X}$ = 5.96 SD = 3.65	Md. = 2.42 $\bar{X}$ = 3.00 SD = 2.75	Md. = 2.63 $\bar{X}$ = 2.64 SD = .38

The pattern for both treatment tasks was similar. The number of information needs assigned to Importance Groups A and C was fairly high; it peaked in Importance Group B and dropped substantially in Importance Group D.

To summarize these data and facilitate interpretation, Mean Importance Ratings (MIRs) were computed separately for each subject's pre-framework and post-framework information needs. Summary statistics on these MIRs were then computed and are presented in the last column of Table 2.

The MIR for each subject was based on a weighted average:

$$MIR = \frac{4\ (\text{Number A*}) + 3\ (\text{Number B}) + 2\ (\text{Number C}) + 1\ (\text{Number D})}{\text{Total Number of Information Needs Generated}}$$

(*Number A = Number of information needs assigned to Importance Group A.) The median MIR for the pre-framework information needs was 2.77 and 2.63 for the post-framework information needs. Although the difference of .14 was statistically significant favoring the pre-framework group (Wilcoxon Matched-Pairs Signed Ranks Test, $z = -2.68$ $p < .01$), this difference is not considered to be practically significant by this author. (No significant difference was found between the MIRs for the pre-framework treatment group and the control group.)

These findings show that treatment subjects assigned approximately the same importance to the information needs they generated before using the framework as to the information needs they identified with the aid of the framework. This indicates that the framework's contributions were judged by the subjects to be relevant, useful, and not at all trivial. As many very high and high importance information needs were generated after the framework was introduced as before. The subjects have rated the needs constructed with the framework as important as those initially conceived without reference to the framework.

Effect of the Evaluation Situation

How did the type of evaluation situation influence the effectiveness of the framework? Was the framework more suited to one type of evaluation situation than to another? The number of information needs identified was

examined by situation (Table 3). For the pre-framework treatment task, few differences in the number of information needs identified for each of the evaluation situations were observed. (Control group results were similar.) When treatment subjects were given access to the framework in the post-framework task, somewhat higher numbers of information needs were generated in S2 and S3, the less familiar context and process evaluations, than in S1, the summative evaluation situation. However, these differences were not statistically significant ($F_{2,73} = 1.74$, $p < .18$).

Table 3

Number of Information Needs Identified, By Situation and Treatment Task

Treatment Task	Situation		
	S1 Summative	S2 Context	S3 Process
	N = 27	N = 25	N = 24
Pre-framework	Md. = 14.75 $\bar{X}$ = 14.56 SD = 5.27	Md. = 14.00 $\bar{X}$ = 14.84 SD = 5.36	Md. = 16.50 $\bar{X}$ = 16.13 SD = 5.30
Post-framework	Md. = 13.00 $\bar{X}$ = 16.67 SD = 10.14	Md. = 21.33 $\bar{X}$ = 22.52 SD = 15.01	Md. = 21.50 $\bar{X}$ = 20.92 SD = 9.25

In general, the evaluation situation seems to have had little effect on the number of information needs generated. In the post-framework task, subjects in the context and process evaluations seemed to rely somewhat more heavily on the framework to supplement their original pre-framework group of information needs than those in the summative evaluation situation, but the differences were not significant. These results indicate

that the framework was effective in aiding subjects to identify information needs for varied evaluation situations.

Comprehensiveness of the Framework

How comprehensive was the framework? Which information needs were not included in the framework? The framework was designed to be as comprehensive as possible. If subjects in the pre framework tasks identified numerous information needs that were not already included in the framework, then the need for major revisions in the scope of the framework would have been indicated. The number of nonclassifiable information needs was used as an indicator of the framework's comprehensiveness. An information need was labeled nonclassifiable if it d'd not correspond to any existing entry in the History, Operation or Impact categories.

For the control group, a median number of 4.5 nonclassifiables was found. For the pre-framework treatment group, a median number of 3.5 nonclassifiables was found. A medians test showed this difference to be nonsignificant ($\chi^2 = .56$, $p < .3$). Over both groups, the nonclassifiable information needs formed 11.83 percent of all nonframework information needs identified.

The classification scheme used to arrive at this figure was a conservative one. The 11.83 percent estimate was based on the experimenter's classifications, but when compared to other raters, the experimenter placed more information needs in the nonclassifiable category than any of the other raters. This tendency can be attributed to the experimenter's

intention to use the content of the nonclassifiables as input for the final revision of the framework.

Implications for Evaluation Practice

The results of this empirical study verify the framework's potential as an effective tool to aid evaluators in identifying a wider range of relevant information needs. The framework provided the experimental subjects with the opportunity to explore evaluation situations and to examine important information needs related to many varied program dimensions. Without the framework, many of these information needs probably would have been overlooked, especially in the History and Operation categories.

The framework has considerable potential as a training tool for beginning evaluators. With it, novice evaluators would become more aware of the wide range of information needs that should be considered in the planning of any evaluation study. For more experienced evaluators, the framework can serve as a checklist, reminding them of the many program factors that may influence final program outcomes. For all evaluators the framework can help to broaden the scope and increase the impact of evaluation studies.

References

Craig, Marilyn Martin. A Framework for the Identification of Information Needs in Program Evaluation. Unpublished Ph.D. dissertation, Cornell University, 1978.

SAMPLES FROM

A FRAMEWORK FOR THE

IDENTIFICATION OF INFORMATION NEEDS

IN PROGRAM EVALUATION

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HISTORY

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Groups	9000
Costs	10,000

HISTORY

Q1 WHAT FACTORS IN THE PROGRAM HISTORY MIGHT AID IN UNDERSTANDING SUBSEQUENT DEVELOPMENTS?

1000 Program Background

Q1000 What background information would be useful?

1100 Origins

Q1100 How did the program get started? When was the idea first proposed? How did the people react?

1110 Originators of the project

Q1110 Who were the original backers? What was their motivation? Were they affiliated with the school? In what way?

1120 Evidence presented

Q1120 How did the original backers convince others that the program was worthwhile? By what process was the proposed program examined? What evidence was presented? In what form?

1121 Opinions
1122 Research
1123 Surveys
1124 Exploration of alternative programs

1200 Educational needs of students

Q1200 What educational needs was the program to fulfill? Was there any evidence (test scores, etc.) that such needs existed?

1210 Instructional
1220 Personal/social
1230 Attitudinal/value

1300 Justifications

Q1300 What justifications were supplied for the proposed program? Were they valid? Were they accepted?

1310 Philosophy

Q1310 Was the program tied to a certain philosophy or educational movement?

1320 Support from the literature

Q1320 Does the educational literature supply any information relevant to the program? Is this information positive or negative? Was this information brought out before the program was adopted?

1330 Mission of the school district

Q1330 Is the program generally in agreement with the educational goals of the school district? How did the program fit the overall plan for the district?

1400 Contributing factors

Q1400 Why was the program adopted? What factors were the most influential? Did the majority of people agree that the program should be adopted?

OPERATION

Q2 WHAT HAPPENS DURING ACTUAL PROGRAM OPERATION?

5000 Curriculum and Instruction

Q5000 How are curriculum and instruction managed? Where are problems occurring?

5100 Planning

Q5100 What planning was done for curriculum and instruction? How did it occur? How thorough was this planning?

5110 Goals

Q5110 What goals were formulated? Were these goals realistic?

5120 Values

Q5120 What values entered into the planning decisions? How did these values influence curriculum and instruction decisions?

5130 Context

Q5130 In what context did the planning occur? How did this context influence the decisions made?

5140 Input groups

Q5140 Who helped with the planning? Was participation voluntary? What type of input came from the various participants? How much did this input influence the final planning decisions?

5200 Curriculum

Q5200 What curriculum plan exists for the program? How carefully is it specified? Can it be put into practice? How would an expert in the field evaluate this curriculum?

5210 Objectives

Q5210 What are the objectives of the program? How are these objectives stated? Do they cover all aspects of the program? Can they be applied?

5211 By subject matter
5212 By type of skill or behavior

5212.1 Knowledge
5212.2 Physical skills
5212.3 Personal/social skills
5212.4 Attitudes
5212.5 Values

5220 Scope

Q5220 How broad is the curriculum? What are major areas of concentration? Is the curriculum effective in meeting students' needs?

5221 Range of the curriculum
5222 Areas of concentration
5223 Provision for student needs

IMPACT

Q3 WHAT WERE THE RESULTS OF THE PROGRAM?

8000 Effects**

Q8000 What effects have resulted from the program?

8100 Achievement

Q8100 On which achievement areas did the program focus? Did the program influence achievement in related courses where the program skills could be applied? Did post-program performance show any long-range achievement effects?

8110 Knowledge

Q8110 What gains in knowledge have occurred? How rapidly did these gains occur? Which of these gains fulfilled program objectives? Which were unanticipated?

8110.01 Names and nomenclature

8110.02 Symbols, rules, standardized processes, definitions

8110.03 Properties, parts, characteristics, features, elements, dimensions

8110.04 Trends and sequences

8110.05 Similarities and differences, discriminations, classifications

8110.06 Contexts, locations, and orientations

8110.07 Operations, methods of dealing with, function

8110.08 Cause and effect relationships

8110.09 Generalizations

8110.10 Criteria or standards

8110.11 Non cause-effect relationships

**Note: For each Effect to be investigated, data must be collected on some group or subgroup of people. These are outlined in section 9000, Groups. For any one effect, the user may wish to measure several groups and/or subgroups.